



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/557,696	04/25/2000	Xiangxin Bi	N19.12-0035	8550

24113 7590 08/24/2005

PATTERSON, THUENTE, SKAAR & CHRISTENSEN, P.A.
4800 IDS CENTER
80 SOUTH 8TH STREET
MINNEAPOLIS, MN 55402-2100

EXAMINER

GORDON, BRIAN R

ART UNIT	PAPER NUMBER
----------	--------------

1743

DATE MAILED: 08/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/557,696

Applicant(s)

BI ET AL.

Examiner

Brian R. Gordon

Art Unit

1743

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6-7-05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14, 39-52 and 58-68 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10-14, 39-40, 42-44, 47, 51-52, 58-68 is/are rejected.
- 7) ☒ Claim(s) 8, 9, 41, 45, 46 and 48-50 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-14, 39-52, 58-68 have been considered but are moot in view of the new ground(s) of rejection.
2. Applicant's arguments, see remarks, filed June 7, 2005, with respect to the rejection(s) of claim(s) 1-5, 10-14, 39, 42-44, 47-48, and 51-52. under Palmer have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Brennan US 5,814,700.
3. As to claims 58-60, 62-65 and 67-68, the examiner asserts the switching valve and outlet valves allow the chambers to be isolated from the ambient environment.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 58-60, 62-65 and 67-68 are rejected under 35 U.S.C. 102(a) as being anticipated by Palmer et al. WO 99/30817.

Palmer et al. discloses a method and an apparatus for chemical synthesis, which includes the following technical features (see pages 6-13 of the description, and Fig. 1): transferring reagents (equivalent to the first quantity of fluid reactants) in a reagent

reservoir into a reaction chamber to react (equivalent to forming a first quantity of product composition) via a pipeline 3; directing the reactants to a detector via a barrier and a fluid pathway 6 that collects product in two different directions (equivalent to collecting the first quantity of product composition using a collector); transferring an aqueous fluid/reagents (equivalent to the second quantity of fluid reactants) for use of screen into a corresponding reaction chamber via the pipeline 3; lastly, directing the product (equivalent to the second quantity of product composition) to the detector via the barrier and a pipeline 6 (equivalent to collecting the second quantity of product composition using a collector); wherein the pipeline 6 is equivalent to a plurality of collectors. The switching valve 3 and outlet valves allows for the products to be collected in the different receptacles (page 12 lines 8-14) and allows the chambers to be isolated from the ambient environment. The products are screened/evaluated by the detector 10 after leaving the pathway 6 (page 12, lines 16-18). The detector may be a laser/CCD detector the employs fluorescence to determine the degree of inhibition of the product on the assay (page 13, lines 1-5).

It is clear the device contains a plurality of inlets as indicated in step a) on page 6, line 16.

It is also disclosed that the reactions are performed in the sealed chambers under different reaction conditions (page 7, lines 3-6). The conditions (temperature, pressure, agitation, etc. (page 8, lines 19-22) may be varied as indicated.

The device employs a pressurized fluid delivery system (pump) and switching valves to move the reactants through the system (page 9 lines 9-19).

It is inherent that if different reagents are combined in different processes different products are yielded.

The process may employ a number of different reactants (vapors and aerosols) to perform different reaction processes (page 10, line 11-16). The reactants may comprise polymer colloid metal particles (page 10, line 29).

The additional technical feature of claim 12 has been disclosed in reference 2 (see pages 6-13 of the description; and Fig. 1): directing products from synthesis and screening to the detector, which implies evaluating the properties of the first quantity of product composition and the second quantity of product composition.

As to claim 58, while the reaction may occur on solid beads, the beads are located within a fluid stream which moves through the respective chambers thereby establishing reactions within a fluid stream.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

Art Unit: 1743

2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
6. Claims 1-7, 10-14, 39-40, 42-44, 47, 51-52, 58-61, 63-66, and 68 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Brennan US 5,814,700.

Brennan discloses a method of synthesis for building a polymer chain, oligonucleotides in particular, by sequentially adding monomer units to at least one solid support for growing and immobilizing a polymer chain thereon in a liquid reagent solution. The method includes the step of: A) depositing a liquid reagent in a reaction well (26) in contact with at least one solid support and at least one monomer unit of the polymer chain affixed to the solid support. The well (26) includes at least one orifice (74) extending into the well (26), and is of a size and dimension to form a capillary liquid seal (seal from ambient environment) to retain the reagent solution in the well (26) to enable polymer chain growth on the solid support. The method further includes the step of B)

expelling the reagent solution from the well (26), while retaining the polymer chain therein.

A sliding seal, generally designated 30, is positioned between the head assembly and the base assembly to form a common chamber 31 (FIG. 3) which encloses both the reaction well and the nozzles therein.

Delivery of reagents through dispensing tubes 44 is controlled by an array of independent valve assemblies 55 in conjunction with a vacuum pump each assembly 55 mounted in-line therewith. These valve assemblies are preferably provided by solenoid driven micro shutoff valves, each capable of opening and closing in less than 5 milliseconds to deliver accurate volumes of liquid reagent. In conjunction with the vacuum pump

A pressure regulation means is to control the operational conditions.

With respect to the structure the individual nozzles alone or the collection of nozzles (22) which make up head assembly (21) maybe considered equivalent to applicant's nozzle and each well (26) may be considered a collector. As disclosed the device may be used in a manner to produce materially different polymers. This process occurs by dispensing different reagents in a flow path/stream through the respective wells in which the reactions occur. The method occurs by sliding the head assembly so as to allow the different reagents to be dispensed from an individual nozzle within the head assembly in the desired order so as form and collect the different polymers therein.

The optical density and synthesis coupling efficiency are subsequently measured.

It would have been obvious to one ordinary skill in the art at the time of the invention to repeat the process in order to form additional materially different polymers.

Allowable Subject Matter

7. Claims 8-9, 41, 45-46, 48-50 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: The prior art does not teach nor fairly suggest the employment of a radiation source as claimed; chemical powder product as claimed; the step of evaluating the crystal structure of the product by x-ray diffraction, the particle size of the product by dynamic light scattering, measuring electroactive and electrical or magnetic properties of the product.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Cook et al. discloses a chemical synthesis device and method employing multiple reagents in order to produce multiple products.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian R. Gordon whose telephone number is 571-272-1258. The examiner can normally be reached on M-F, with 2nd and 4th F off.

Art Unit: 1743

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to be 'ERM' with a stylized flourish at the end.

brg